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The American Cinematographer

The Voice of the Motion Picture Cameramen of America the men who make the pictures

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Negative Test Method As Condenser Aid

New method outlined for testing of projection system

By J. T. Beechlyn

From transactions, Society of Motion Picture Engineers

The subject of condensers has undoubtedly come in for a larger share of discussion before this society than any other single element employed in the optical train of projection system In view of the many excellent papers presented, it might appear needless to bring this matter again before the society

The need of further work in condenser design and particularly as applied to the incandescent lamp has, however, persisted and this was emphasized by facts brought out in a paper before the last meeting of the society and the discussion that followed in which it was shown how far from the ultimate efficiency we really are

A large number of test data are available in our transactions showing relative light values with various condenser systems at a great many different settings In striving for further improvement, it is, however, also of value to know the exact causes of the shortcomings of any particular arrangement or combination, and it is the object of this paper to describe a method that at least to some extent enables one to determine this

It is well known that if a screen is moved along the optical axis in front of a projection lens, the various planes containing other elements behind the lens will successively be brought into focus Thus the aperture is brought to a sharp focus a considerable distance away while the image of the condenser first appears as we approach closely to th lens where its various surfaces successively are brought out with more or less sharpness

Examination of the aerial image at this range by means of a blackish screen is often of value in checking the alignment of condenser and aperture with respect to the axis, since these may both be distinguished at the same time if they are not too far removed from each other It is also, however, of some value in determining the effectiveness of the whole arrangement with respect to the light source since a portion of the field may be found to be but dimly lighted or even entirely obscured

It is evident that such a condition indicates the insufficiency of the source area to satisfy that particular lens system The fault may really belong with the condenser in misdirecting the light, still, if the source area was extended far enough it would under ordinary conditions eventually be able to cover any missing portion of the field. A dark area in the condenser image is therefore really a projection of some portion of the dark surroundings of the source area If by changed setting or substitution of a lens element the obscured area is eliminated, there still is no certainty that the efficiency is improved since a large portion of the field may now be lowered in intensity without the eye being able to detect such shortcoming under these conditions The eye will, however, readily perceive a very small fraction of the ultimate light value when this is contracted with entire obscuration

Therefore as we reverse conditions and replace the light source with a dark target possessing identical dimensions and surround this with a lighted area, a negative image of true condition is created on the screen and the eye will be in a position to detect readily any portion of the target's surroundings that has reached the screen since this will now appear as light and by its position indicate which part of the condenser is at fault

If the target is of sufficient area to cover the field through a given lens system or, what more nearly meets existing conditions (since we are dealing with a limited and standardized source area) if the condenser is able to convert the target image so as to satisfy fully the objective, then no light will be transmitted and the criterion for condenser efficiency therefore becomes a black screen

If the condenser lenses be mounted without frames and the lighted area behind them be extended so that light is permitted to enter the aperture past the edge of the condenser lenses, some light may strike where it will appear as a bright ring surrounding the black disc that represents the condenser image proper The width of this band indicates to what extent the full aperture of the objective lens is being utilized by the angle subtended by the condenser and entire darkness does not result until this has been carried to the limit and the 100 per cent condenser attained This figure refers, of course, to the directional properties only and takes no cognizance of the reflection and transmission losses with the detection of which this method has nothing to do

With the testing apparatus that has been constructed various defects of existing condenser systems can be readily demonstrated, such as spherical aberration in plano convex systems, unevenness of surface in moulded lenses and riser rings in prismatic condensers

There can also be demonstrated the 100 per cent distribution efficiency of a new aspheric condenser that has lately been developed

It has been shown before this society that a very substantial gain in efficiency can be obtained with a standard four-inch 900-watt incandescent source by the use of small condenser lenses of short focus placed close to the aperture, the gain observed in comparison with a 4½-inch condenser being of the order of 50 to 60 per cent

Now the question naturally arises as to what this gain is due The lenses employed had ordinary spherical and plane surfaces Why did not spherical aberration prevent this efficiency? The answer is of course, that although spherical aberration did take place in both cases the distance traveled by the ray in the case of the small lens was not sufficient to cause a linear displacement that would cause it to miss the aperture or fail to reach the objective lens. The fact is that there is nothing that can be obtained by working close to the aperture that cannot be equalled with larger lenses placed farther back if only proper corrections be made in the lens surface The farther back we go the greater the accuracy required It is like the problem of hitting a window at a distance of a few yards which can be accomplished almost without aim with most any kind of device but if the range be increased to a thousand yards then there is required a rifle made with extreme accuracy and handled with great skill

The new condenser is a two-lens combination corrected for abberration and to avoid image formation at the aperture With it is realized the same gain of 50 to 60 per cent which was indicated with the smaller condenser It is 5 inches in diameter and designed for a distance of 6½ to 7 inches from the aperture With this distance extreme accuracy of the surface has not been required, which is largely due to the provision for a considerable surplus at the aperture plate A surplus can ordinarily be obtained in two ways, through enlargement of the source or through a high magnification ratio, coupled with a larger intake from the given source If a 100 per cent screen is to be maintained in practice, a surplus is required by reason of three considerations

1 To cover inherent defects in the design
2 To cover inaccuracies in manufacture
3 To cover inaccuracies in alignment

A liberal surplus has been attained by raising the intake angle from 76 degrees as in the prismatic to 106 degrees in the present lens This brings the rear lens very close to the source, but cracking is prevented by employment of heat resisting glass in this element It gives a uniform screen at a setting close to its position for maximum light

Filming African Wild Game

Shooting game with camera more dangerous than hunting with gun, famous cinematographer finds

By Herford Tynes Cowling, A. S. C.

The author, Herford Tynes Cowling, A. S. C., with his camera and typewriter in "Darkest Africa," which he writes "is not so bad, cheerio." Cowling is famous the world over as a cinematographer-traveler-writer.

A few years ago all the travel cinematographers were trying to get into the South Sea Islands at one time; then immediately after the war, Paris and the battlefields appeared to be their happy hunting ground, and a year later I met no less than six Yankee camera boys in North Africa, all "shooting" for different concerns, and now a good many seem to have contracted the wild-game "bug" at once and are "doing" equatorial Africa.

Truly British East Africa is the "happy hunting ground" for those who want to shoot or picture wild game. On certain plains the game abound in unbelievable numbers, herds containing thousands and thousands of head of wild game roam at will; zebra, wildebeest, buffalo, antelope of a dozen species, elephant, rhinoceros; while the lion, leopard and more dangerous game prey upon these herds at night, all unmolested by the native tribesmen, who seldom kill a wild animal unless a man-eating lion attacks their tribesmen.

Man-Eaters Are Aged

A man-eater is an old lion which has become too old to chase and capture the fleetfooted game, and invades the native villages from sheer hunger, otherwise a lion will not attack a man unless molested or surprised.

20,000 in One View

Last month I stood on a high point in the Loiter Plains where the late Colonel Roosevelt did considerable of his big game shooting in Africa, and estimated twenty thousand head of wild game within sight in a radius of five miles. It was one of the most wonderful sights I have ever seen when the native Masai tribesmen attempted to round them up and caused a stampede for my camera, racing at breakneck speed, first in one direction, then another, finally following the wind and disappearing over a hill directly towards the setting sun. I believe the results of this film will be well worth while.

Wild Game Requirements

Trying to get moving picture films of wild game is, I am frank to admit, the most difficult work I have ever attempted. Filming wild game requires not only the equipment and skill of a cinematographer, but in the case of dangerous game, the assistance of at least one expert hunter, ideal conditions, a liberal supply of patience to which

En route to hunting grounds.

must necessarily be added a considerable amount of luck

Guns, Camera, Animals—Not Congenial

Most of those who attempt to photograph wild game make the mistake of trying to combine a photographic expedition with that of a hunting or shooting party and therein lies their greatest handicap principally because if is practically disastrous from a picture standpoint to fire a gun within several miles of where one expects to photograph for regardless of how much game there may be in the immediate vicinity the game all become nervous and suspicious for several days afterwards

The reasons for this mistake are manifold A wild game expedition is very expensive so the photographer hopes to cut down his overhead by "ruling" a shooting expedition that is going out on safari also he feels inclined to do a little shooting himself to vary the monotony of the long waits and times when photographing is impossible but the hunter and photographer work at different times of the day and a hunter is generally on his hunting grounds before daylight and returns to camp by the time the sunlight is good enough for photographing starting again before sunset and hunting until dark, when the more nocturnal species are just coming out

Nocturnal Game

Most dangerous game have become nocturnal, so the photographer plays in luck when he can get them out in sufficient light to make a picture The torrid sun of equatorial Africa necessitates early morning and later afternoon work for both the hunter and the photographer So the hunter saves time by making early morning marches changing camp and hunting at the same time, starting before daybreak in the morning

Digging out an old water-hole on a "thirst trek."

Gunbearer and camera boys.

Hunting and Filming Clash

This, the photographer cannot do, but has to make camp and "stay put" somewhere for several days Almost everything on a shooting expedition is contrary to a photographic expedition for wild game pictures, especially as no shooting is permitted on the game reserves where the photographer works best, yet every shooting expedition that has arrived in British East Africa within the last six months has brought a moving picture camera

Charging Lions

What the wild game photographer generally wants to film is the most difficult subjects to get, and that is a moving picture film of a charging lion or rhinoceros A lion will not charge the camera unless stalked and frightened by being shot at or wounded, or cornered in the bush and driven out by hounds and spearsmen

Marksmanship Versus Danger

In any of these cases it is as likely to bolt, or charge one of the driving spearsmen as to charge the camera, in which latter event the lion must be killed. This requires the presence of at least one expert shot, to cover the camera, with a heavy express rifle and another gun in reserve It would be nothing short of suicidal to attempt to film a lion charge without these rifles to cover the camera, but with two heavy rifles to cover the camera there is a minimum of danger, and that danger lies in the event of engaging a number of lions at once, which is not unusual

One of our lions ran a hundred yards to cover after being hit by two 470 soft nose bullets and two .303 soft nose bullets any one of which shots would have eventually killed the lion He ran at top speed away from the guns

Picture "shoot," camouflaged camera, concealed to prevent stampede of game which is ever elusive photographically

Cowling and marksman waiting at water-hole for game. Note the blind in front of camera.

covering the distance in what I estimated to be about six seconds, but had the lion decided to "charge" the guns, which were eighty yards away, he would most likely have been stopped before he reached the camera, which was covered by three guns. The lion failed to charge after being wounded, which was unusual, but being in the open plains the lion would certainly have run away unless shot at. This lion was found dead in the edge of the brush shortly afterwards.

Cinematographer Must Court Destruction

In photographing, the cinematographer takes far more chances than a hunter who is merely out to shoot lions at sight. The hunter generally shoots his lion at a far greater range than it is usually possible to begin taking an effective picture, and wounds the lion before he is in camera range. Such distance considerably lessens the chance of the wounded lion locating the guns and charging, especially in long grass or bush country, when the lion will most always take to cover when wounded, if not engaged at close quarters. For picture work, the lion must not only be invited or forced to charge but after the charge is begun, any shots must be withheld until the beast is dangerously near the camera. A charging lion will cover a hundred yards in less than ten seconds from the jump and more often than not come from cover at some unexpected angle, all of which makes the camera range more difficult to anticipate.

Lion Charge Strategy

Filming lion and other wild game when they come down to drink at water holes in the game reserve has very little danger attached, but requires untold patience. On the whole the best method of filming a lion running direct at the camera is by "driving" a lion that has been located in the bush with hounds and spearsmen, the lion can then be expected to break cover at a point purposely left open and seemingly charge direct at the camera which is camouflaged in the brush. The effect of a charge is obtained, while the lion is unlikely to attack the camera, even though it is located by him, after avenue of escape is left. After long weeks of failures and disappointments, the cinematographer out after lion charges is likely to take chances when he does finally get the opportunity. The result has been a good many cases of mauling by lion and some fatally so. When I came to Africa to film wild game, it was with the understanding that I would always have two heavy guns to cover me when attempting to film dangerous animals, and I have never found any reason to vary from that policy.

A more distant view of water-hole and method of camouflage used.

Rhino Charges

Pictures of charging rhino are not as difficult as lion, while elephants are far more dangerous than either lion or rhino. A rhino can be turned or dodged at the last moments of the charge, as it always charges up-wind on account of blindness to anything over twenty feet, being guided entirely by scent. The stupid, lumbering brute will charge on in the same direction for a considerable distance even after losing the scent having apparently no judgment of the distance covered.

Water-Hole Patience

The best method to obtain cine films of wild game is to build a boma (camouflaged blind) at the edge of a water hole which is daily frequented by wild game, accumulate a liberal supply of old American magazines (the English publications put me to sleep) and learn a lesson in patience. After the first few days one learns to visit all the nearby water holes, block them up with underbrush so the game will be forced to either come down to the hole near his cover or

Night "ingoma" (dance) by African natives to celebrate killing of first lion on hunt.

go a very long distance for their water.

Often one finds they prefer the latter course and it then becomes his move to follow the game. These operations are best conducted in the large game reserves (government permission required) where the game are never molested by either hunters or natives, who are not permitted there; consequently the game will often come to a water hole knowing that someone is nearby under cover. In such cases the first few turns of the camera will stampede the whole herd, but they will also come back again after about two episodes of the serial story you have been reading all day.

Two Drinks a Day

In a picture boma, time hangs long and heavy. The game water twice a day—at night and again about four o'clock in the afternoon. Camp must be made several miles from the water-hole and a very quiet entrance made into the boma before noon. The slightest click will stampede a small antelope, which in turn will cause several hundred head of game to become immediately frightened and stampede.

Glint Causes Stampede

I once started to photograph two excellent species of wart hogs which were coming down to my cover, but while attempting to change from six-inch lens to a twelve inch telephoto, the glint of light on the lens frightened them away. Running pell mell, they caused a large herd of zebra, antelope and wildebeest which were slowly coming down to the water hole to stampede. That finished the work for the day. It is very tantalizing to have a fine herd of mixed wild game come slowly wandering down to your water hole cover just as the sun sets in a rosy tropical haze and when it is too dark to get an impression on the film. One of my native guards dropped his gun one afternoon two miles away from the picture boma, the gun was discharged and the report stampeded the game at my picture boma sufficient to finish the work for that day. Dangerous game—being more nocturnal—seldom come to water in the daylight, while the zebra, antelope, buffalo, wildebeest and like species, prefer the daylight when they are not so likely to be molested by the carnivorous lions and leopards, as at night.

Young female lion on a young antelope kill.

Game Footage Expensive

My safari consisted of ninety-five native negro porters, four white persons, twenty two tents, gun-bear-

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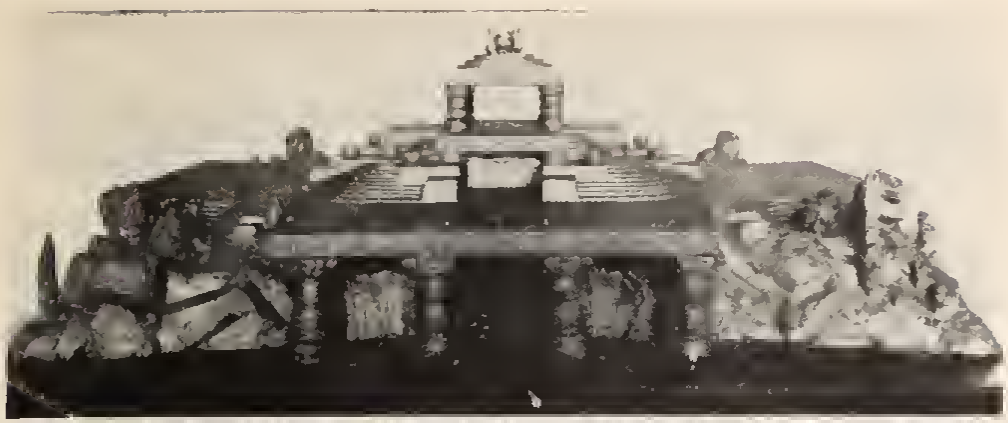

AMERICAN HISTORICAL REVUE AND MOTION PICTURE EXPOSITION STAGE AZTEC DESIGN SIZE 200 FEET SQUARE, WITH THREE FLOOR LEVELS

Film Exposition Rounding Into Shape

Apex of cinema achievement to be reflected in Monroe Doctrine Centennial

International interest aroused by motion picture industry's huge undertaking

The American Historical Revue and Motion Picture Exposition, to be held in Los Angeles, July 2nd to August 4th in celebration of the one hundredth anniversary of the Monroe Doctrine, is rapidly approaching the form of its ultimate brilliance, according to announcements which carry interest for those interested in any phase of the cinema.

The Spanish Colonial type of architecture, atmospheric of early Southern California days during the Latin influence, has been selected as official style for the centennial. Architects are completing plans for the construction of the various exposition buildings, work on which is scheduled to begin at an early date.

"The Location"

Originating in the well-known motion picture expression which signifies the shooting of scenes outside the confines of the studio, "The Location" has been chosen to designate that portion of the forthcoming centennial that would have been known as the "midway" in expositions of former years. Along "The Location" will be placed the exhibits of the motion picture industry. Buildings erected for such exhibits will observe the Spanish Colonial type of architecture. The first exhibit to be reserved is that of the Rockett Lincoln Film Company and calls for the reproduction of the cabin in which Abraham Lincoln was born. The exposition replica of the Lincoln birthplace will be sheltered with a building erected overhead, after the fashion followed with the original cabin at Hodgenville, Kentucky. The Rockett exhibit will be provided with a vast number of Lincoln relics and documents which have been gathered in more than a year of research for the Rockett production of "The Dramatic Life of Abraham Lincoln," which Philip E. Rosen, A. S. C., is directing as one of the most extensive feature productions in motion picture annals and which is being photographed by Robert Kurrle, A. S. C.

Technical and Art Departments Busy

Among the other production companies which have reserved exhibits, the nature of which has not as yet been announced, are Universal, Pickford-Fairbanks, Christie, Metro, Hal Roach, and Louis B. Mayer. Unlike the attractions which lined the "midways" of past expositions, the exhibits along "The Location" will not require admission prices but will be open free of charge to all who attend the centennial. It is said that motion picture producers plan to make the buildings and features which line "The Location" the most sumptuous that their resources can create. Art and technical departments of leading film companies are said to be working on assignments which seek to represent the motion picture industry at its highest in the various exhibits.

Recognition for Unseen Screen Workers

Since the art and technical workers in cinema work have been selected almost without exception as being outstanding figures in their lines of endeavor—many having been brought from great distances after having been persuaded to turn their talents to film production—it is claimed that the exhibits along "The Location" will be unequalled in exposition grandeur. "The Location" exhibits are construed as offering the opportunity for the work of the technical, art and other departments which ply their professions unseen behind the scenes, to gain full

AMERICAN HISTORICAL REVUE AND MOTION PICTURE EXPOSITION GENERAL PLAN SHOWING MAIN ENTRANCE IN FOREGROUND WITH ESPLANADE LEADING TO COLISEUM WITH STAGE IN CENTER

public recognition, as it is believed that Los Angeles, at the time of the centennial, will hold the largest gathering of people ever assembled in Western America

The location of "The Location" will fall into four divisions describing a semi-circle about the Court of Honor which will be laid out in Exposition Park, in Los Angeles, where the centennial will be held Approximately 100,000 feet will be embraced in these divisions.

General Interest Attracted

While the exposition is primarily of motion picture atmosphere, it is attracting a full measure of attention in professional, industrial, commercial and school circles throughout the country Industrial and commercial exhibits, installed by business leaders who realize the advantages accruing from the patronage of the throngs which will attend the affair from every part of the country, will predominate, according to present indications An exhibit and concession department is already actively at work attending to such details of the centennial

Pictures and Diplomats

Educational and diplomatic interest is centered on the historical ramifications of the undertaking, since it commemorates the one hundredth anniversary of the promulgation of the Monroe Doctrine A distinct diplomatic flavor is lent by the announcement that President Harding has accepted an invitation to be present at the exposition premiere on July 2nd and is expected to be attended on that occasion by his official family who will be conveyed to Los Angeles in a special trans-continental train Members of the Senate and the House of Representatives are said to be planning to attend the affair in large numbers Reports of their attendance are received enthusiastically throughout Southern California, a great potential field which may be improved in various ways by Congressional action Representatives of the Latin American republics, whose territorial integrity has been protected for a century by the Monroe Doctrine, will be among the honor guests.

Educators are evincing interest in the fact that the American Historical Revue division of the centennial will present in tabloid and pageant form highlights in American history as decided as such by a jury of eminent scholars and historians These presentations, it is planned, will be filmed while they are being enacted as historically correct as research can determine and will be released for subsequent exhibition

Cinematography Called In

This will be the first exposition in the world's history where the exhibits and important happenings will be filmed Plans for the filming are still in the embryo, but when completed will in themselves constitute a highlight in cinematographic undertaking

This is the first instance wherein the motion picture industry as a whole has joined in the sponsoring of such an affair Those participating in the affairs of the exposition number virtually every film organization and producing company in prominence

Stage and Coliseum Dimensions

This coliseum, which will hold the exposition, was constructed at a cost of $1,000,000 and is said to be the largest ever built The Coliseum of Rome could be placed in its central space, it is said

This greatest of modern amphitheatres is elliptical in shape It extends thirty feet below the natural ground level and fifty feet above it There are eighty-six exits and entrances beside the main entrance, which is beautiful in its classical simplicity The peristyle is of stone and concrete and is 400 feet wide, its main arch being seventy-five feet high The seating capacity of this magnificent coliseum is nearly 80,000, the famous Yale Bowl being smaller with seats for about 10,000 less

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A Lot of Little Photographs

Every production bound up in series of little photographs, laboratory expert points out

By John M. Nickolaus

Tendency to minimize photography, unreasonable ☐ Cinematographic atmosphere and laboratory

Producers of motion pictures make use of practically every known trade, a great range of commodities, the highest paid artists and writers and of other things too numerous to mention Yet there is only one thing they actually sell—photographs—a lot of little photographs When it is brought home to these producers that whatever their costly productions represent is represented in photography, it will be easier for them to appreciate the personal advantage of just a little better grade of this important medium

If motion picture photography has failed to keep up with the advancement of other branches of the industry, it is principally because the heads of the producing organizations have not been sufficiently impressed with the fact that their output is nothing more nor less than a lot of little photographs, or, if you prefer it, a moving photograph

Little Photos Hold Result

When Universal finished "Foolish Wives" at a reported expenditure of more than a million dollars, all Mr Laemmle's organization had to show for this, all the sales force had to offer to exhibitors and the public was a lot of little photographs The thousands of people employed, the magnificence of the sets, the year and a half spent in production—all were represented by a series of one by three quarters inch pictures, on narrow ribbons of celluloid

A few months ago Paramount sent a small army into the fast vanishing wilds of the Western country to film Emerson Hough's story, "The Covered Wagon" James Cruze, the director, staged Indian battles, the magnitude and realism of which staggered old settlers of that region who had actually lived through the dangerous times of which the story tells Yet all Mr Cruze and his huge company did is now being presented to the public through a lot of little photographs

The entire theater world is awaiting with pleasurable anticipation the Goldwyn production of the immortal "Ben Hur." Goldwyn was reported to have paid an even million dollars for the screen rights to General Lew Wallace's great story The big Goldwyn organization is being tuned up like an airplane engine before a gruelling flight, that "Ben Hur" may be its supreme achievement Warner Brothers

John M. Nickolaus

are buying the foremost works of current literature for the screen Schulberg, Coogan and Lesser have production plans of similar scope Yet all THEY will have when they have finished their present ambitious programs—all this amazing expenditure of money, time and talent will have to be presented to the public through a lot of little photographs

(Editor's Note: Mr. Nickolaus is Vice President of the Standard Film Laboratories, Hollywood, and is considered one of the industry's foremost experts on photography and film laboratory work. He was one of the first men in the business and had been laboratory superintendent for some of the biggest producers when he and S. M. Tompkins undertook the organization of the institution of which they are now the heads. In a recent issue of The American Cinematographer Mr. Nickolaus recalled some interesting experiences of the crude pioneer days of the motion picture industry. This, his second of a series of articles, should be of isterest to every cinematographer.)

The Christie Studios and Buster Keaton are using all their ingenuity and originality to devise something new under the sun in the way of screen comedy They spend days working out some novel idea to evoke a momentary laugh, but the pungency of the humor will depend frequently upon the ability of the cinematographer to do his part The photography must be nearly perfect and the finished print must be sharp and clear to do the situations full justice, for all these keen humorists have at the end is a lot of little photographs

Photography Always Basic

This whole vast enterprise, with its millions invested in Hollywood, its ramifications extending throughout the world, and its centralization there of the dramatic talent and artistry of many nations, is basically dependent upon photography Still one occasionally encounters a man who attempts to minimize the importance of the cinematographer and the proper developing and printing of his work Of course no one actually denies that these are factors to be considered in the making of a successful motion picture but now and then a producer fails to give them the consideration they deserve

A lavish set adds nothing to a picture if its beauties are not recorded by the camera Even if this set is properly photographed as a background for the action of the play, the time and money expended in its construction are wasted unless the cinematographer gets the proper kind of cooperation in the laboratory developing his negative and printing his film

There are so many things that might happen to a picture from the time the director finishes the last scene until the public sees the completed work that the laboratory's responsibility would be bewildering were it not for the fact that this responsibility is a matter of daily routine When Mr Tompkins and I conceived the idea of The Standard Film Laboratories we had in mind and fully realized the responsibility of the laboratory to the producer and the cinematographer We proceeded to develop an organization in which every member realizes and fully appreciates the importance of his particular task to the producer whose film he is handling This realization is constantly with each

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The Editors' Corner

—conducted by Foster Goss

A PARADOX

A paradox, produced by evolution extending over a period of several centuries, may be said to exist in the fact that the motion picture industry is sponsoring the forthcoming Monroe Doctrine Centennial which is to be held in Los Angeles, July 2nd to August 4th, in the form of a motion picture exposition and American historical revue.

The paradox lies in the fact that films are supporting an exposition—one form of amusement and instruction locking arms with another. By all terms of etiquette, they should be locking horns instead of arms; they should be combatting enemies.

Why they are not, may not be evident to the populace of the present day, but if the cinema had come into general usage 1400 years ago, there would be no such situation as the motion picture industry as a whole sponsoring an exposition.

What films are to the general public today, the exposition—or its far removed grandfather, "the fair"—was to those of our grandfathers who roamed Europe a thousand or more years ago. The exposition, made more extensive by modern magnitude, stands plainly as a survival of the ancient fair which originated in Italy about 500 A. D. The fair idea, probably because of the crude stage of communication facilities, spread slowly and it was not until 800 A. D. that fairs were established elsewhere—at Aix-la-Chapelle and Troyes. Alfred the Great, perceiving the advantage which the fair held as a clearing house for the trading of servants and cattle, introduced the first into England in 886. As decades passed, the fairs became rooted as an institution not only in England but in Germany and Northern Europe where by the year 1000 they were in common use for the sale of slaves. Gradually the fair, which began to take on the form of what the exposition is today, became woven into the lives of the people as an entertaining force as well as a power for trade. They began to look forward to the various neighborhood fairs which became the destinations on the itineraries of the wandering minstrels who welcomed the business opportunities which a large collection of the country folks had to offer. In fact, the fair, encouraged and regulated by such rulers as William the Conqueror, Edward III and Henry VI who probably sought to relieve the minds of their subjects from the royal tyrannies, may be said to have become the only entertaining force in the lives of the masses. At the fair where there were dancers, fools, jesters and other crude forms of entertainment, Gurths and their wives and children could at least forget their back-breaking days of labor, and make merry for the moment. So the ancient Britons and Teu-

tons had to have their fairs just as their progeny of today must have their beer and ale and stout.

What would have happened then, if motion pictures, not prefaced by the development of the drama, literature, inventions and general learning, had made its entrance in the neighborhood of 1000 A. D.? Would the cinema have been received on such amiable terms by the fair, its greatest and probably only entertaining rival among the masses, that it could have safely sponsored an exposition—a fair—to which it would have invited the people of the world to attend to observe what a great creative industry it really is? Wouldn't it have been natural for them to have sought the scalps of each other on general and specific principles? Hence the paradox, rendered imperceptible contemporaneously by the intervening centuries of evolution in other forms of entertainment.

"CO-OPERATION"

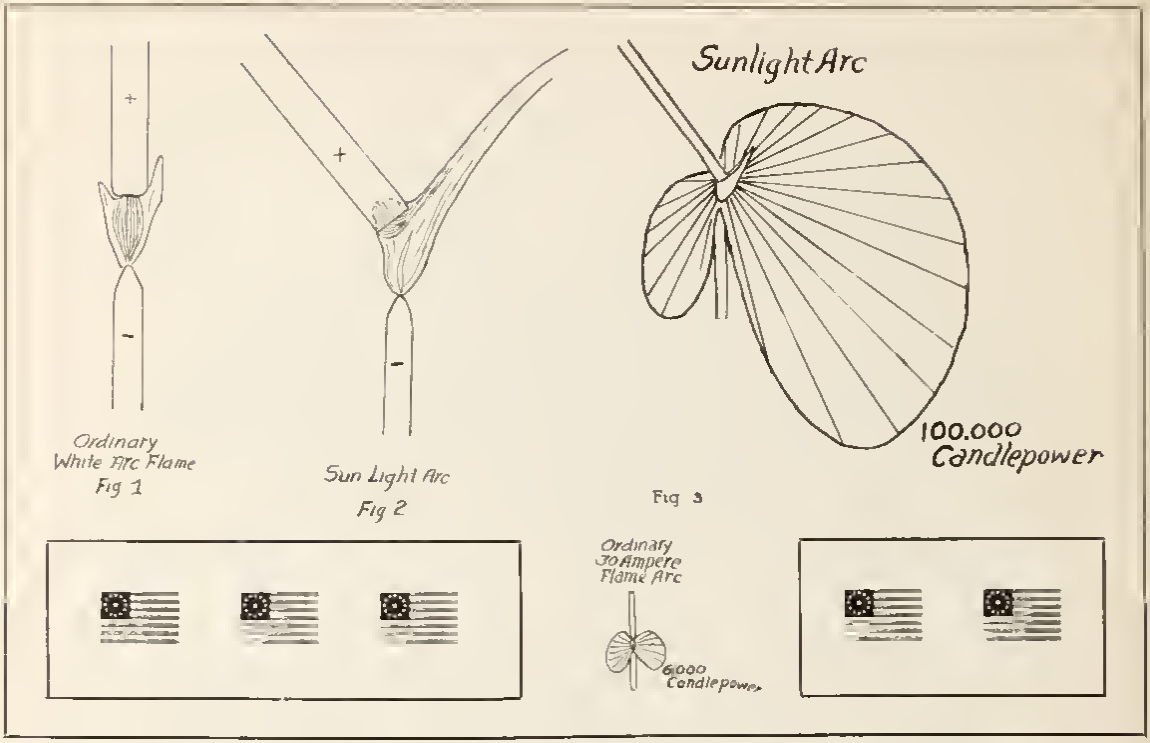
In a well reasoned address delivered recently before an open meeting of the American Society of Cinematographers, Fred Niblo gave those present an insight into the qualities which have made him one of the most successful of directors and which have carried him to the presidency of the Motion Picture Directors' Association.

If Niblo's address had a keynote, it was that much abused and little observed term in pictures—"Co-operation."

The M. P. D. A. president named four producing elements among which, in his opinion, a maximum of co-operation should particularly exist if a really "great" picture is to be made; these divisions were cinematographer, director, author and cast. Niblo further emphasized the importance of clockwork co-operation among all departments involved in the making of a picture. He held up as ridiculous the director or producer who refuse to give their cinematographers scripts before the filming of a production begins.

Niblo is an example of the successful motion picture director who carries his policy of co-operation into effect; but there are those who preach co-operation but who make no attempt to practice it.

No matter how much is said about co-operation, nor how little is done about it, the fact remains that there is only one way to bring about co-operation, and that is to co-operate.



The Sunlight Arc In Cinematography

By P. R. Bassett

Courtesy of Electrical Illuminating Engineers Society

Data concerning quantity and distribution of light from research department of Sperry Gyroscope Company

The main steps in the progress of every industry are marked by the introduction of new tools. This applies especially to the motion picture industry, even though its tools are quite unique. Perhaps the most important tools which the modern picture producer utilizes are the lighting units. There is no other industry so directly reliant on light in the quantity and variety that is demanded in producing motion pictures. Each new lighting unit that allows new and different lighting effect to be obtained, or that permits lighting to be accomplished better, cheaper, or more quickly marks another distinct step in the progress of the motion picture art. Perhaps the most recent apparatus to qualify as an important step in improved studio lighting is the Sunlight Arc.

Although the Sunlight Arc has been used in increasing numbers during the past few years by all the larger companies and is now considered as an indispensible part of the lighting equipment of a motion picture studio, little has as yet been published on the quality of the light and the technical details of its unit. It has been the general practice in studios to accomplish the illumination of sets by great numbers of small lighting units. The average studio equipment up to a few years ago consisted of many small units, each of which consumed anywhere from ten to fifty amperes.

150 Amperes

The Sunlight Arc was the first radical departure from this small unit practice. A current of 150 amperes is consumed by each Sunlight unit. The superiority of the Sunlight Arc is not, however, due merely to the fact that it uses more current than other units. If the arc was nothing more than a high current arc, it would hold no particular advantage over the smaller units. But the high current in the Sunlight Arc is used only as one of the means of producing a new type of arc which gives an amount and quality of light which far exceed that which can be produced by the same current used in any other unit or group of units.

Characteristics

Aside from these advantages, the fact that it is distinctly a new source of light makes it interesting and valuable to analyze the characteristics in some detail. Figures 1 and 2 show in a striking manner, the difference between an ordinary white flame arc as used in the studio and the Sunlight Arc. Both arcs have approximately the same arc length of about the same size. The most noticeable difference in their appearance is that whereas the ordinary flaming arc is giving light uniformly from its entire arc flame between the two electrodes, the Sunlight Arc is comparatively non-luminous throughout the greater part of its arc length. Practically all of the light is emitted by the brilliant vapor which fills the deep crater in the positive or upper electrode. Seventy-five percent of the total light from the arc comes from this vapor filled crater, twenty per cent of the total light comes from the tail flame which is the overflow of this vapor from the crater, only five percent of the total light comes from the arc flame proper between the electrodes.

Figures

The confining of this light-giving vapor within the crater gives the arc many remarkable properties. The total candle power of this arc instead of being about 40,000, which would be the estimated figure for the candle power of an ordinary flame arc burning at 150 amperes, is more than two and one half times this figure, or 100,000 candle power. If we should group five 30 ampere flame arcs, such

(Continued on Page 23)

Motion Picture Theatre Lighting

Compiled by
A. L. Powell

Lighting Service Department,
Edison Lamp Works

From time immemorial men have been accustomed to meet for amusement, edification and companionship and today we have for these purposes, the theater, the lecture hall and the club or lodge room

The Greeks and Romans constructed gigantic theaters and colosseums for the enactment of their dramas and spectacles but in those days, we are told on good authority, "the performance began early in the morning, so early in fact, that some of the spectators came during the night before the performance" Such lectures or public meetings as were held took place either on the side of a hill or in the Forum and naturally occurred in the daytime for there was no satisfactory method of artificial lighting

With our present complexities of business life, most meetings and performances occur after dark and generally indoors Proper lighting is, therefore, a very important factor not only for the transaction of business and comfort of the audience, but also as a very effective means of decoration, and of creating a suitable atmosphere

Electricity is almost universally applied for lighting, due to its safety, ease of control and adaptability. Our modern stage productions would indeed be impossible if we had to depend on the candles, oil lamps and gas burners of bygone days

Entrance, Foyer and Lounge

At the entrance of the theater, it is necessary to have brilliant illumination to attract the passing crowd The pupil of the eye contracts when subjected to this bright lighting and unless the foyer is fairly well lighted, it will appear dark by contrast Since the eye requires a certain period of time to accommodate itself to changes in intensity we must gradually reduce the amount of illumination as we proceed from the entrance to the auditorium

In attaining this end, it seems desirable to provide a moderate intensity of about five foot candles in the foyer, and there is a wide latitude in the choice of equipment; hanging luminaires, pedestal lamps, wall luminaries and cornice lighting have all been applied with success

A golden yellowish tone of light is frequently employed and proves very attractive The hangings and wall decorations should be planned with due consideration to the color of the illumination In other words, the fabric should be examined under the particular light to be used before it is selected Under yellow light a deep blue appears a slate green, a red appears orange, a green, yellowish green and so on It is, therefore, possible to enhance the decorative value by the proper combination of color or to materially distort the appearance

In the rest rooms, the decorative element is predominant and as the name implies, it is desirable to simulate the effects produced in the living room at home

We proceed from the foyer to the lounge and a lower intensity of illumination, one or two foot candles, is desirable here As a contrast, a reddish amber tint of light may be used The theater and motion picture house are becoming more elaborately decorated each year, and the value of light as a decorative medium is being appreciated more and more It is impossible to go into detail as to the many ways light may be used and we must content ourselves with a few specific examples

There are frequently a number of translucent vases as

part of the lounge decoration Under ordinary conditions they are simply one element in the general scheme, dull and lifeless It this room is illuminated as suggested with warm light and one vase has a purple light inside, another green, another blue and so on they will then stand in relief, touches of color and life

By such means beauties heretofore unappreciated become high spots of the decoration Pure colors rather than tints, are best for such effects as these but should be selected with due consideration for surrounding colors The lamp filament should not be visible through the glass and the surface, while appreciably brighter than the background, not brilliant enough to be glaring Art glass inserts can be similarly treated Silk shaded table and floor lamps and even wall units are among the devices to which pure color can be applied for essentially decorative effects (that is, no dependence is put on them for general illumination), the object of course being to obtain contrast and touches of high light

In some foyers miniature waterfalls or fountains are installed Colored lamps in suitable moisture proof fittings can be concealed behind the falling water and in the pool itself A motor-driven flasher may be used to change the color of light continuously The combinations are limitless and the fascination of watching the constantly varying display of color in the particles of water is indeed great

Frequently clusters or bouquets of hothouse flowers are purchased to be used for decorations They represent an appreciable expenditure and unless something striking is brought into play, they are scarcely noticed by the patrons for they fade into the background How much more attractive the interior is when such flowers are spotlighted A small automobile headlight reflector with concentrated filament lamp, fed by a storage battery or through a transformer, can be effectively concealed and used to direct a beam of light on the flowers Small flood lighting projectors with standard voltage lamps or even ordinary deep bowl reflectors with low wattage lamps have been applied with excellent results

In other instances marble busts, statuettes and the like are placed in niches but receive no special lighting treatment Concealed colored lamps can be used to produce some very striking effects The application of tinted light to statuary or architectural details is one of the most interesting phases of illumination For example, if an object in relief is lighted by red light from one side and by green light from the opposite side, the shadows cast by the red will be illuminated in green those cast by the green light will be high spots of red light, at points where both colors mix, yellow light will result The play of light and shade in color is truly marvelous Delicate shadings from one tint to another are produced and unthought of, hidden beauties brought to life With three colors still more startling effects can be secured

These effects of light can be well studied by using a small black box or booth with colorful lamps at different points so wired that they can be readily controlled

Motion Picture Auditorium

The day of the dull, darkened motion picture auditorium is rapidly passing and the time is not far distant when suitable illumination will be made mandatory This will not work a hardship on the industry, for proper lighting will make the theater more attractive, reduce the liability of panic and eliminate the gloom which is always attendant with a darkened room All these features will tend to increase the attendance, which, of course, is the end toward which the management strives.

Contrary to the general impression it is quite feasible to provide sufficient illumination for patrons to find their way to the seats and even read the program without interfering with the appearance of the picture Intensities in the order of 2 foot candle at the rear of the house and

(Continued on Page 20)

Rene Guissart, A. S. C., is chief cinematographer in the production of the screen version of "Chu Chin Chow," which the Graham Wilcox Productions, Ltd., are producing as a feature vehicle which will employ upwards of 10,000 in many of the scenes, according to word received from London. Location scenes for this production will be filmed in Austria, Germany, France and Algeria. Guissart has been making cinematographic preparations for the film for the past three months.

* * *

David Abel, A. S. C., is shooting the Thompson Buchnan-Elmer Harris-Frank Woods production of "The Talisman."

* * *

Norbert Brodin, A. S. C., is shooting "Duley," starring Constance Talmadge.

* * *

Tony Gaudio, A. S. C., is filming "Ashes of Vengeance," starring Norma Talmadge.

* * *

Robert Doran, A. S. C., is enjoying a well-earned vacation following the completion of the latest Snub Pollard comedy.

* * *

Walter Griffin, A. S. C., will photograph Paramount's production of "The Scarlet Partner."

* * *

Frank Good, A. S. C., is making preparations for the filming of the latest Jackie Coogan production for Metro.

* * *

E. B. DuPar, A. S. C., is shooting the Gene Sarazen series of productions on championship golf.

* * *

Joseph Dubray, A. S. C., is at Truckee filming scenes for the latest Harry Carey production.

* * *

Philip E. Rosen, Robert Kurrle, Fred Jackman, William Fildew, Floyd Jackman, Walter Griffin and George Schneiderman, all A. S. C. members, have returned from Truckee following the completion of "snow" locations scenes for current productions.

* * *

Victor Milner, A. S. C., is working with Seitz in the photographing of this Ingram production.

Harry Perry, A. S. C., has taken up where the other A. S. C. members left off and has journeyed to the Truckee stamping snow grounds for scenes in "The Broken Wing," a B. P. Schulberg production.

* * *

Fred Granville, A. S. C. member, who has been amazing Europe with his feature productions, has left his studios in London long enough to visit New York City.

* * *

Sam Landers, A. S. C., is shooting the Finis Fox production "The Man Between."

* * *

John Stumar, A. S. C., is shooting the modern production of "The Spoilers" at the Goldwyn studios.

* * *

George Meehan and Georges Rizard, both A. S. C. members, have finished the Charles Ray production of "The Courtship of Miles Standish."

* * *

Steve Norton, A. S. C., has finished a series of special assignments, executed for the Ray picture.

* * *

John Seitz, A. S. C., has begun the filming of Rex Ingram's production of "Scaramouche" at the Metro studios.

* * *

Philip E. Whitman, A. S. C., has returned from Tia Juana, Mexico, where he filmed race-track scenes for a forthcoming Universal production.

* * *

Reginald Lyons, A. S. C., has finished the latest Phil Goldstone production starring Richard Talmage. Reggie, by the way, is still pursuing his pastime of acquiring automobiles as a hobby. The latest is an English sport car.

* * *

H. Lyman Broening, A. S. C., is a very proud man these days, and the reason for his pride is a very noble one. It is a husky eight-pound boy, the second in the Broening family. Mother and son are progressing wonderfully while Lyman answers congratulations, thank you.

* * *

Charles Schoenbaum, A. S. C., has left for New York to film Bebe Daniels' vehicle, to be directed by Wesley Ruggles.

Fake snow and ice in studio set for Charles Ray's "The Courtship of Miles Standish." George Meehan, A. S. C., on extreme right.

Real snow and ice at Truckee, California, being shot in scene for comedy starring Bull Montana. Floyd Jackman, A. S. C., at the camera.

And Here's Another

The American Cinematographer
Hollywood, Calif.

Gentlemen:

The writer was in the office of one of the largest and best known manufacturers of motion picture apparatus a few days ago, and was told by their advertising man, who is also well known and very successful, that he considered the Cinematographer the only real technical periodical dealing with the motion picture industry; and that he considered the American Society of Cinematographers a body of highly developed technical men.

We enjoy the Cinematographer very much and our mechanical engineer is always deeply interested in many items contained therein.

Thinking perhaps you would like to know when praise is extended from men who are considered good critics, I am writing you the remarks of the advertising man mentioned above.

I would give you his name but am not sure whether he would care to be quoted as he does not know I am writing this letter.

Very truly yours,

JOHN D. ELMS, President
WIDESCOPE CAMERA & FILM CORP.

Motion Picture Theatre Lighting

(Continued from Page 17)

1 foot candle at the front meet these conditions Bright light sources must be eliminated if comfortable conditions for viewing the picture are desired and hence the indirect systems of illumination are of especial service here.

In addition to providing the low intensity desirable while the picture is being shown, it is necessary to have a means of instantly flooding the auditorium with light Fires, smoke, explosions, etc, are factors which often cause an audience to become panic stricken If with adequate lighting they can see for themselves the proximity of the danger, the chances of accident are decidedly reduced

While it is true that the low intensity of illumination can be obtained through the use of dimmers inserted in the circuits, it is preferable to have the fixtures constructed to accommodate two or more circuits Thus low wattage lamps can be burned at their proper efficiency for the low intensity and the loss of power in the resistance is avoided Dimming devices are of course necessary to obtain graduations of color, when such effects are used.

In those auditoriums where it is not deemed advisable to supply at all times sufficient general illumination for the patron to find his seat with safety, so called aisle lights are employed to advantage

The indirect system of illumination can be made to be decorative and as ornamental as any of the other systems which may be less applicable to this particular problem It has the additional advantage that any degree of uniform illumination can be obtained without introducing glare A fairly high intensity produced with the ordinary systems of direct lighting is quite likely to introduce glaring conditions Most of the modern theaters have elaborately decorated ceilings and the upward light is an advantage

Indirect lighting does not necessarily mean monotony In recent years many forms of indirect equipment have been developed which permit a wide latitude in choice of equipment Ornamental bowls in various decorations pendant from the ceiling, or probably the most commonly encountered form Coves and cornices can be well utilized for concealment of lamps and reflectors Large portable floor stands so placed as not to intertere with the view have been applied Wall brackets and urns with inverted mirrored reflectors are also called into play where there are no cornices available In the long narrow theater with a low ceiling, it is often desirable to use indirect wall luminaries in order to avoid interfering with the projection of the picture In some instances, the front edge of the balcony has been extended and with special construction used as a location for indirect lighting units

Even where indirect lighting is employed for the principal source of illumination, the effect of a direct lighting installation can be obtained by so designing the main fixture that it is luminous on the exterior Even the cut crystal with its scintillating beauty has been employed for this purpose Fixtures have been made carrying inverted mirrored glass reflectors with relatively large efficient lamps, the reflectors concealed within a framework or housing and this in turn surrounded by a crystal casing. Alone the crystals would appear dull and lifeless but skillfully placed and properly directed floodlighting projectors send beams of light on the exterior of the fixture, causing it to have the desired sparkle Similarly the candlestick with silk shade has been employed in conjunction with the large units

Where cornices and coves are used for concealing the light, attention must be paid to the equipment of these Frequently, through a desire to save on the original cost, receptacles are placed within the cove and no reflecting device whatever provided, the rough plaster finish being used Needless to say, this has relatively little reflecting power and moreover, unless the contour of the cove is designed by someone who understands the principles of

light reflection, it is an accident if a favorable distribution of light results. Mirrored glass reflectors are very efficient for this purpose and should be employed. Enameled reflectors are next in order of desirability. A reflecting surface finished in paint is likely to deteriorate very rapidly and plaster is open to the same objection. Small particles of dirt lodge in the crevices between the particles of plaster and reduce its reflecting power.

Not only is the question of the design of the cove and choice of reflecting equipment for use in it of importance, but observation of actual installations of this type of lighting indicates oversight of an element which must be given attention if the lighting is to be permanently successful. This is the cleaning of lighting equipment. In many instances months and even years elapse without a thorough cleaning. The only attention the lighting receives is an occasional replacement of burned out lamps and this is not attended to until the effect becomes so spotted that it is extremely noticeable. The accumulation of foreign material on the reflecting surfaces and lamps is indeed heavy, and it would be fair to assume that with the neglect so prevalent the depreciation factor which must be applied to the installation is considerably over 50 per cent. In other words, half of the light which is being paid for is being lost through dirty conditions.

The orchestra lights in the moving picture auditorium should be carefully selected. If poorly designed with considerable reflected or "spill" light, they are annoying to the audience and also affect the clearness of the picture. Several really satisfactory types utilizing the indirect principle are now on the market.

Attention should be paid to the color of the "frame" surrounding the picture. The deep black frequently employed is not well suited, for it creates too severe contrast. A rather light tone of gray is preferable.

In many of the larger more modern houses, elaborate systems of colored lighting are installed. The use of colored light for psychological and decorative effects is unquestionably most desirable, and we shall see more of this as time progresses. At present, however, huge clusters of lamps of pure color are often visible and the lighting fixtures themselves rather than the lighting effects become the center of attraction. The novelty appeals but this method of illumination is scarcely subtle enough to endure. Eventually light will be applied with greater ingenuity or skill and delicate effects, rather than an obviously crude method, will come into use.

Colored light is of great value in the motion picture house in connection with the musical program. The relation of light and music is not as indefinite as many imagine, and this question is discussed in detail in a later section.

The lighting of the motion picture auditorium will undoubtedly go through the same transition that the world's fair has experienced. In the days of the St. Louis, Jamestown and Buffalo Expositions, bare incandescent lamps were studded over all the buildings to furnish so-called "outline" lighting. The effect was striking at first sight, but was not of a quality which caused one to pause and admire for an appreciable length of time. At the Panama Pacific and at the Brazilian Centennial Expositions, outline lighting was tabooed. Soft pastel shades and tints were employed, lamps were concealed from view and the beauties of the architecture brought out through painting with light. We might use an analogy to still further illustrate this. In music the obvious soon dies, but the composition with hidden beauty survives. Most of the popular airs of a generation ago are unknown to the youth of today but Beethoven's "Minuet" will be "popular" centuries hence.

Building Exterior

The exterior of the building should be illuminated to attract the attention of the passing crowd. This may be accomplished by several means.

An extremely high intensity of light is often used adjacent to the entrance Several high candle power Mazda lamps equipped with weatherproof fixtures and diffusing globes are suspended from the building, beneath the marquee, or placed on ornamental standards at the front In other instances the under portion of the marquee is literally studded with diffusing bulb lamps to produce the desired effect

A somewhat more spectacular method of bringing the building into prominence is the use of elaborate electric sign equipment and outline lighting

Probably the most dignified and artistic means of building front illumination is obtained through flood lighting For flood lighting to be effective the surface must be relatively light in color and the surroundings fairly dark It is necessary to have suitable stations for the location of projecting equipment Several of the more recently constructed buildings have taken this matter into consideration and the marquee has been so designed that projectors can be located on it

The exact scheme to employ will depend to a great degree on the character of the building and its location If of a monumental type well proportioned and dignified, flood lighting is best suited If the facade is not particularly attractive, it may be well to partially hide it by an electric sign If situated somewhat off the regular run of traffic the high intensity scheme will tend to divert the crowd

Light and Music

One of the most interesting phases of the application of colored light is in connection with music It is a fascinating subject to the experimenter, be he scientist decorator or musician To all intents and purposes, it offers a virgin field for constructive effort and the motion picture theaters constitute a huge laboratory extending from coast to coast

To obtain results one must have apparatus with which to conduct experiments huge symphony orchestras under the direction of capable, sincere progressive conductors, adequate capacity in electric current to supply the necessary light flexible control of switching apparatus, electrical men with ingenuity in the handling of light and audiences, varied in character, as subjects Surely one could not ask for a better set of conditions

(To Be Continued Next Month)

Film Exposition Rounding Into Shape

(Continued from Page 10)

The Stage

A stage 200 feet square and suggestive of an ancient Aztec temple has been designed especially for the exposition and will be built in the center of the coliseum This stage has three graduated levels—the top for bands and orchestras, the next level for spectacles and ballets, and the main stage for the floats and pageants These pageants and spectacles will be limited to evening performances, while concerts will take place in the afternoons so that attention during the day will not be diverted from the exhibits

PATTERSON ON TRIP FOR STANDARD

E F Patterson sales manager for Standard Film Laboratories, is leaving on a business trip which will take him to several key cities of the East and Middle West He expects to stop first in Kansas City and later in St Louis Patterson will call upon exchange men distributing Paramount, Schulberg Lichtman, Warner Brothers, Coogan, and Christie pictures, as well as distributors of several other independent producers whose photoplays are brought to the screen through Standard Prints The purpose of the trip will be to establish a closer relationship between Standard Film Laboratories and the exchanges handling their product

Rosen and Kurrle on Lincoln Picture

Philip E Rosen, pioneer cinematographer, first president of the American Society of Cinematographers, and now one of the foremost directors of the motion picture industry, will direct the Rockett Lincoln Film Company's production, "The Dramatic Life of Abraham Lincoln," according to recent announcements, which also carried the information that Robert Kurrle, A S C, will photograph the vehicle

The selection of Rosen to direct the Lincoln vehicle comes as a distinct honor, as it has been generally known in motion picture circles for several months that the Rockett production on the life of Lincoln is to be produced on a scale achieved by few feature productions For weeks, the question who was to direct the vehicle has been a vital one and has been a subject for conjecture throughout the profession In announcing the confidence placed in Rosen's ability, the daily press pays high tribute to his past achievements, both as a director and as the cinematographer of successful features As a cinematographer, Rosen, it will be remembered, filmed "The Miracle Man," one of the most successful motion pictures ever made Choice of Kurrle to film the Lincoln production constitutes a highlight in that A S C member's brilliant career, which particularly adapts him for the work at hand in the Rockett film.

Al and Ray Rockett, prominent film producers, head the Rockett Lincoln Film Company which is producing the Lincoln picture

The Sunlight Arc in Cinematography

(Continued from Page 14)

as shown in figure 1, we would then have the same current consumed as in one Sunlight Arc But the best light obtainable from a 30 ampere flame is 6 000 candle power, making the total light from five of these arcs 30,000 candle power The advantage of using this same amount of current in one Sunlight unit is quite evident, since 100,000 candle power obtained is over three times the resulting total of the group of smaller arcs

This surprising increase in candle power and efficiency is due to the concentration of the vapor under slight pressure in the positive crater The temperature of the vapor is also greatly increased and with the increase in temperature there comes also a tremendous increase in actinic value, which gives a still greater advantage to the Sunlight Arc as a photographic unit

Figure 3 shows the candle power distribution curves of the arcs shown in figures 1 and 2 The ordinary 30 ampere flame arc gives approximately 6,000 candle power in all directions, since the flame as a whole is giving the light. The distribution of light from the Sunlight Arc is entirely different and herein lies one of the reasons for the great efficiency of the Sunlight Arc The distribution of the light from this arc lies almost entirely in one hemisphere

80 Percent From Crater

Since almost eighty percent of the total light from this arc emanates from the crater, it falls entirely within the hemisphere toward which the positive crater is pointed The Sunlight Arc is the first unit for general studio lighting which has the advantage of throwing practically all of its light in one hemisphere without the use of any form of reflector All other sources of light used in the studios have a uniform light distribution in all directions and hence must use some form of white reflector in order to reflect the half of the light falling away from the scene back onto the scene Such arrangements are compromises since half of the light is then direct and the other half is indirect and diffuse Although these arrangements are good enough for the average general studio lighting, they

are not perfect in producing all direct light or all diffused light. The Sunlight Arc, however, is capable of producing either all direct or all diffused light as desired, with maximum efficiency.

Sharp Shadows

The concentration of the light from the Sunlight unit has the advantage, when the arc is used direct, of casting extremely clean-cut and sharp-edged shadows, such as cannot be produced with the same effectiveness with any other available studio illuminant. The point may be brought up that a concentrated source of light has only limited uses. It must be realized, however, that it is very simple to cause diffusion of a concentrated source of light by any one of a number of means, but it is quite impossible to concentrate a diffused source of light. The application of the Sunlight Arc used with ground glass for diffusing, or aluminum painted reflectors for the same purpose, gives results in soft lighting which are equal, if not superior, to the results obtained by the standard diffused sources of light in general use. The high efficiency of the Sunlight unit is maintained, no matter what means are employed for producing the diffused light, if a ground glass is used, the crater is faced away from the scene toward the reflector, which casts the diffusely reflected light back onto the scene without allowing any of the direct rays to fall on the set, thus no sharp shadows thrown when only soft and shadowless lighting is desired.

A Lot of Little Photographs

(Continued from Page 11)

man and woman in our plant, and it precludes the possibility of carelessness.

Interpreting Desired Atmosphere

One of the most important functions of the laboratory is that of interpreting correctly the atmosphere the director and cinematographer are trying to register through the camera. Tastes vary in this regard and it is the laboratory's task to get the effect for which the makers of the picture are striving. The director of today has worked this out to a particularly fine point. While making his picture, scene by scene, he knows exactly the psychological effect he wants the finished work to have on the audience. The effect is obtained not alone by action or cleverly worded subtitles, but to a great extent by photography.

Hence it is necessary for all of us in the photographic branch of the industry to be alive constantly to our responsibility and to assure the director the effects on the screen for which he is striving. The desired results can be obtained only through proper co-operation of director and cinematographer, to be followed by the close co-operation of the cinematographer and the laboratory.

One Laboratory Responsible

If the public is to know eventually the fine degree of artistry made possible by the producer's great expenditure it naturally follows that the laboratory privileged to work closely with the director and cinematographer from day to day is most likely to turn out release prints that carry the picture's full quality through to the screen. In plainer words, one laboratory should be held responsible for the entire operation from camera to screen, thus eliminating any chance of excusing unsatisfactory results.

It is needless to say that any possible improvement in these little photographs is well worth the effort and expenditure required, for these photographs are the only evidence of the producer's skill the public sees.

In designing, building, equipping and organizing our plant we provided for carrying motion pictures through camera to screen. We started out with one ideal—the betterment of photography. Whatever success we have had has been due to our efforts to raise the industry's photographic standard. It is extremely gratifying to find this ideal and our efforts to live up to it appreciated by the foremost producers of the West.

New 'Baby' Camera Is Created

Information comes of a new creation in diminutive motion picture cameras in the form of the Ica Kinamo which Harold M Bennett is about to place on the American market

The Ica Kinamo is said to be especially adaptable for special work in professional cinematography as well as being an instrument designed for amateur work

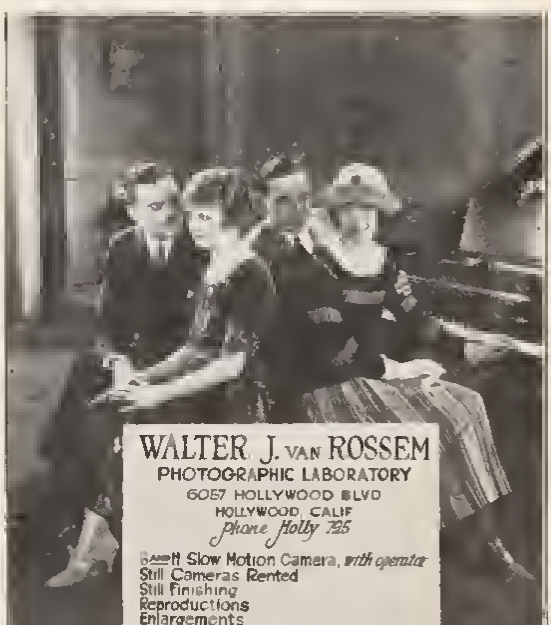
The new creation accommodates 50 feet of standard film, has one stop as well as the standard movement, tripod, a film punch, Carl Zeiss f 3 5 Tessar, and is of 4 cm focal length

While the instrument has not formally been placed on the market as yet, the demand is said to be of such a nature that the manufacturers are experiencing difficulty in meeting orders

Filming African Wild Game

(Continued from Page 8)

ers, personal boys, in all over a hundred when on the march, which included a light traveling picture unit of eighteen porters with cameras and supplies for a few days The actual daily maintenance cost of such safari is about sixty dollars while on safari—that is exclusive of outfitting or any other expenses—only maintenance Hunting wild game in Africa with a cine camera is good fun, but very expensive footage My last safari took exactly two months' time out and netted me six thousand feet of exposed negative, undeveloped, uncut, unedited So if any of you are contemplating a wild game trip to Africa, figure it out for yourself



RELEASES

February 25th, 1923, to March 18th, 1923

TITLE	PHOTOGRAPHED BY
"Brass"	Norbert Brodin member A. S. C.
"The Isle of Lost Ships"	Arthur L. Todd
"Your Friend and Mine"	Rudolph Bergquist, member A. S. C.
"Are You A Failure?"	Harry Perry, member A. S. C.
"The Grub Stake"	J. B. Walker
"The Law Rustlers"	Not Credited
"The Man From Glengarry	Jacques Bizuel
"Just Like A Woman"	Reginald Lyons, member A. S. C.
"Rob 'Em Good"	Irving Ries
"Daddy"	Frank B. Good, member A. S. C.
"Mr. Billings Spends His Dime"	C. Edgar Schoenbaum, member A. S. C.
"The Famous Mrs. Fair"	Charles Van Enger, member A. S. C.
"Scars of Jealousy"	J. O. Taylor
"The Midnight Quest"	Charles Stumar, member A. S. C.
"Uneasy Feet"	Park Ries member A. S. C.
"Good Bye, Girls"	Joe August
"A Ringer For Dad"	Kenneth MacLean, member A. S. C.
"Can A Woman Love Twice?"	Joseph A. Dubray, member A. S. C.
"Adam's Rib"	Alvin Wyckoff
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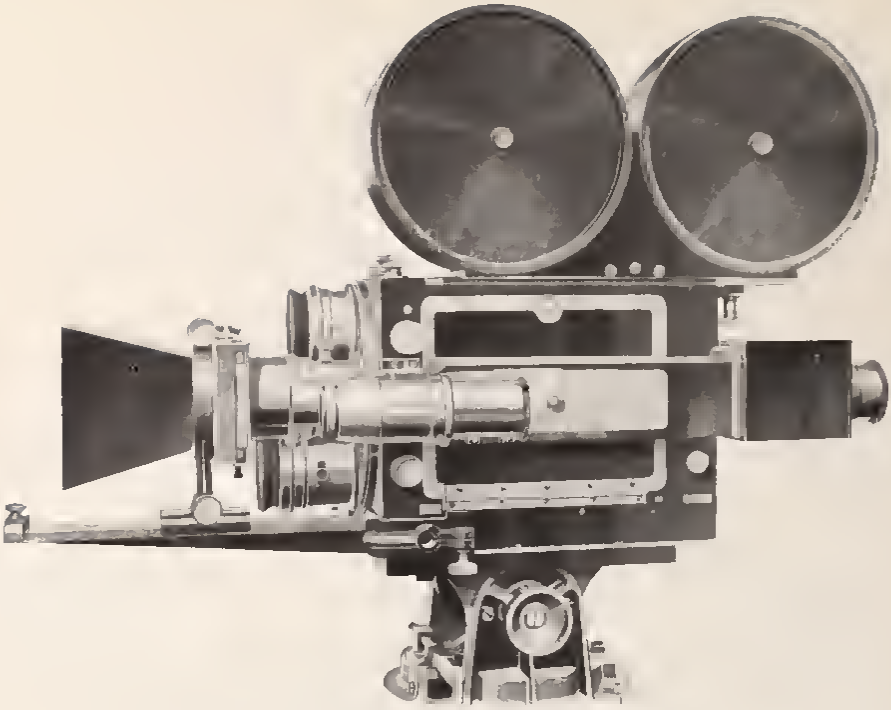

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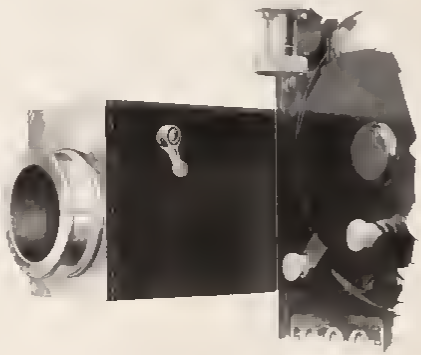

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